

I Claim:

- 1 1. Apparatus for sensing temperature of an object in contact with a
2 reference surface, the apparatus comprising:
3 a sensing element resiliently mounted within a recess in the reference surface
4 to contact an object disposed on the reference surface;
5 photoluminescent material disposed on the sensing element to emit luminous
6 flux in response to energetic excitation thereof; and
7 an optical channel having one end positioned relative to the sensing element
8 to transfer luminous flux therebetween, and having an opposite end disposed to
9 optically couple to optical analysis apparatus for sensing luminous flux supplied
10 thereto from the optical channel.
- 1 2. Apparatus as in claim 1 including a substantially planar spring
2 disposed within the recess of substantially cylindrical configuration to resiliently
3 support the sensing element in substantially coaxial orientation within the recess.
- 1 3. Apparatus as in claim 2 in which the spring is configured as a disc
2 disposed within the recess substantially co-planarly with the reference surface for
3 resiliently supporting the sensing element to produce resilient force thereon in a
4 direction toward the reference surface which increases non-linearly with deflection
5 away from the reference surface.

1 4. Apparatus as in claim 2 including photoluminescent material disposed
2 on the sensing element for emitting radiant flux with an intensity characteristic that
3 is indicative of temperature in response to stimulation thereof with radiant energy;
4 and including
5 an optical channel having a proximal end disposed near the sensing element
6 for transferring radiant flux between the proximal end and a remote end of the
7 optical channel.

1 5. Apparatus as in claim 4 in which the optical channel includes a first
2 portion adjacent the proximal end, and a second portion adjacent the remote end;
3 and including
4 a coupling structure disposed intermediate the proximal and remote ends for
5 selectively optically coupling together the first and second portions of the optical
6 channel.

1 6. Apparatus as in claim 4 including analyzer apparatus optically
2 coupled to the remote end of the optical channel for selectively supplying
3 successive pulses of radiant energy thereto and for receiving via the optical
4 channel during intervals between pulses the radiant flux emitted by the
5 photoluminescent material in response to pulses of radiant energy supplied thereto.

1 7. Apparatus as in claim 6 in which the analyzer apparatus responds to
2 the characteristic of rate of change of intensity of radiant flux emitted by the
3 photoluminescent material on the sensing element to determine the temperature
4 thereof.